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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: RICHARD A. BRANDT

Serial No.: 08/642,575

Filed: May 3, 1996

For: SPORTS RACKET HAVING A
UNIFORM STRING STRUCTURE

Group Art Unit: 3711

Examiner: CHIN, RALEIGH W.

APPELLANT'S BRIEF

Date: April 21, 2003

Assistant Commissioner for Patents
Washington, DC 20231

ATTENTION: Board of Patent Appeals and Interferences

Sir:

APPELLANT'S BRIEF (37 C.F.R. 1.192)

This brief is in furtherance of the Notice of Appeal, filed in this case on December 23, 2003. The fees required under ' 1.17, any required petition for extension of time for filing this brief and fees therefor and the authority and time limits established by the Decision mailed January 21, 2003, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief is transmitted in triplicate. (37 C.F.R. 1.192(a))

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This brief contains these items under the following headings, and in the order set forth below (37 C.F.R. 1.192(c)):

- I. REAL PARTY IN INTEREST
- II. RELATED APPEALS AND INTERFERENCES
- III. STATUS OF CLAIMS
- IV. STATUS OF AMENDMENTS
- V. SUMMARY OF INVENTION
- VI. ISSUES
- VII. GROUPING OF CLAIMS
- VIII. ARGUMENTS

(check each category of Argument submitted in this brief)

- ☐ ARGUMENT: VIIIA REJECTIONS UNDER 35 U.S.C. § 112, FIRST PARAGRAPH
- ☐ ARGUMENT: VIIIB REJECTIONS UNDER 35 U.S.C. § 112, SECOND PARAGRAPH
- ☒ ARGUMENT: VIIC REJECTIONS UNDER 35 U.S.C. § 102
- ☒ ARGUMENT: VIID REJECTIONS UNDER 35 U.S.C. § 103
- ☐ ARGUMENT: VIIE REJECTIONS OTHER THAN 35 U.S.C. §§ 102, 103 AND 112

- IX. APPENDIX OF CLAIMS INVOLVED IN THE APPEAL
- X. APPENDIX OF DRAWINGS

The final page of this brief bears the attorney's signature.

I. REAL PARTY IN INTEREST (37 C.F.R. 1.192(C)(1))

The real party in interest in this appeal is:

- ☐ the party named in the caption of this brief.
- ☒ the following party: Richard A. Brandt, an individual

II. RELATED APPEALS AND INTERFERENCES (37 C.F.R. 1.192(C)(2))

With respect to other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in this appeal:

- A. ☒ there are no such appeals or interferences.
- B. ☐ these are as follows:

III. STATUS OF CLAIMS (37 C.F.R. 1.192(C)(3))

The status of the claims in this application are:

<u>Claim</u>	<u>Status</u>
1. (Twice Amended)	Independent
2. (Original)	(Depends from claim 1)
4. (Original)	(Depends from claim 1)
6. (Original)	(Depends from claim 1)
7. (Original)	(Depends from claim 1)
9. (Original)	(Depends from claim 4)
10. (Original)	(Depends from claim 1)
11. (Original)	(Depends from claim 1)
12. (Original)	(Depends from claim 1)
13. (Original)	(Depends from claim 1)

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims in the application are:

Claims 1, 2, 4, 6, 7, 9-13.

B. STATUS OF ALL THE CLAIMS

1. Claims canceled: 3, 5 and 8
2. Claims withdrawn from consideration but not canceled: None
3. Claims pending: 1, 2, 4, 6, 7 and 9-13
4. Claims allowed: None
5. Claims rejected: 1, 2, 4, 6, 7 and 9-13

C. CLAIMS ON APPEAL

The claims on appeal are: 1, 2, 4, 6, 7 and 9-13

IV. STATUS OF AMENDMENTS (37 C.F.R. 1.192(C)(4))

The present application was filed October 4, 2001 as a continuation application with claims 1, 2, 4, 6, 7 and 9-13 with a preliminary amendment amending claim 1 and canceling claims 3, 5 and 8. The January 15, 2002 Office Action rejected claims 1, 2, 6, 11 and 13 under 35 U.S.C. §102(b) and rejected claims 4, 7, 9 and 12 under 35 U.S.C. §103 (a), both rejections made in light of U.S. Patent No. 4,861,029 issued to Takatsuka (hereinafter "Takatsuka").

In response thereto, the Applicant filed an amendment on April 15, 2002 providing amendments to independent claim 1 to clarify the differences and thereby overcome the rejections.

A. Final Office Action was mailed on June 21, 2002 in which the Examiner rejected claims 1, 2, 6, 11 and 13 under 35 U.S.C. § 102 (b) and claims 4, 7, 9 and 12 under 35 U.S.C. § 103 (a), both in light of new prior art, U.S. Patent No. 4,566,695 issued to Melby (hereinafter "Melby").

In response thereto, the Applicant traversed the rejections and filed a Rule 1.116 amendment providing further amendments to independent claim 1, along with a Notice of Appeal from the primary examiner to the Board of Patent Appeals and Interferences pursuant to 37 C.F.R. § 1.191.

In an Advisory Action mailed January 21, 2003, the Examiner stated that the proposed amendments made after final rejection would not be entered.

V. SUMMARY OF INVENTION (37 C.F.R. 1.192(C)(5))

The present invention provides a sports racket having a racket face 15 which has a rectangular shape with opposite sides being parallel and equal in length. Longitudinal strings 20 and transversal strings 25 are all the same length and vibrate at the same frequency and therefore

will respond identically. A ball struck almost anywhere on the racket face 15 will encounter the same grid of strings and will therefore respond with the maximum degree of uniformity. The uniform string structure of the present invention provides for the ability to select different tension and/or mass densities for the transversal strings 25 and the longitudinal strings 20 so that all the strings on the racket face 15 vibrate with the same frequency. The vibrational frequencies can be made equally by choosing the appropriate tension to mass ratio for the transversal strings 25 and for the longitudinal strings 20. The result will be a racket all of whose strings vibrate with the same frequency.

Moreover, the greater area of the racket face 15 of the present invention leads to longer strings at non-central locations. The longer the strings are that are encountered by a ball, the smaller the angular deflection error. Therefore, the present invention, having longer strings, will reduce the angular deflection error.

VI. ISSUES (37 C.F.R. 1.192(C)(6))

The following issues are presented for review:

1. Whether claims 1, 2, 6, 11 and 13 are unpatentable under 35 U.S.C. §102(b) as being anticipated by Melby.
2. Whether claims 4, 7, 9 and 12 are unpatentable under 35 U.S.C. § 103(a) as being obvious in light of Melby.

VII. GROUPING OF CLAIMS (37 C.F.R. 1.192(C)(7))

The Applicants hereby state that all of the claims stand or fall together.

VIII.C. ARGUMENTS--REJECTIONS UNDER 35 U.S.C. § 102(b),**(37 C.F.R. 1.192(c)(8)(iii))**

The issue presented on appeal is whether claims 1, 2, 6, 11 and 13 are unpatentable under 35 U.S.C 102(b) as being anticipated by Melby. The Applicant replies in the negative and submits that the claimed invention is patentably distinct over the cited reference. In order to sustain a rejection under 35 U.S.C. § 102, every limitation in the claimed invention must be identically shown in a single cited prior art reference. *In re Bond*, 15 USPQ2D 1566 (Fed. Cir. 1990).

Melby requires a racket with adjustable mounts consisting of threaded ends for engagement with a nut and two looped portions at the opposite end for engagement with the strings. See Melby, col. 2, lines 21-32. Specifically, Melby requires strings to be looped in pairs and connected in pairs to the frame. Structurally, Melby requires string "pairs" to be connected to facilitate the ultimate disclosed goal of facilitating replacement of a string loop or tightening of a string loop without disassembly of the entire frame. See Col. 1, lines 8-24.

Rejection of Claim 1:

In contrast, twice amended claim 1 reads in relevant part:

said head having a means for securing strings to the frame;

a plurality of transversal strings, all being of substantially identical length, running essentially parallel to each other and generally perpendicular to said longitudinal axis and secured to the frame; and

a plurality of longitudinal strings, all being of substantially identical length, running essentially parallel to each other and parallel to said longitudinal axis and secured to the frame, the transversal strings and longitudinal strings together covering the entire racket face.

The present invention provides a novel design in order to provide a racket that enables greater ball control by minimizing racket rotation and tuned vibrational frequencies after a hit. In order to accomplish such a function, the "means for securing strings to the frame" must be accomplished in the manner depicted in all the drawings of the present invention and indicated in the specification of the present invention. In particular, each of the strings must be separately and individually connected to the frame to establish vibrational frequencies that are equal. See Spec., p. 8. Means plus function language must be provided the broadest reasonable interpretation in light of the specification. In re Morris, 127 F.3d 1048, 10544-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997). Therefore, it is elementary that the means claim should be read in light of the specification.

Melby fails to teach a means for securing strings to the frame that would accomplish such a function. In fact, Melby teaches against individually and separately connected strings since Melby specifically teaches string loops to aid in to facilitate Melby's ultimate disclosed goal of facilitating replacement of a string loop or tightening of a string loop without disassembly of the entire frame. See Col. 1, lines 8-24. Moreover, it cannot be interpreted that the strings are "running essentially parallel to each other" since the strings as defined in Melby are individual string pairs or loops. See Col. 1, lines 16-24. Therefore, although the string pairs or loops may be seen as essentially parallel to each other, each of the strings are not in fact "essentially parallel to each other" as required by claim 1. Such a structural difference not only negates a finding of anticipation under 35 U.S.C. 102(b) because each and every limitation is not taught in Melby, but also causes a resulting performance that is contrary to the teachings of the present invention.

The Applicant therefore respectfully submits that claim 1 is patentable over Melby and requests that the rejection be reversed.

Rejection of Claim 11:

Claim 11 in relevant part requires that the racket of claim 1 have "tension and/or mass values of said longitudinal strings and said transversal strings are selected so that the vibrational frequencies of the strings are equal." Melby neither teaches selection of tension and/or mass values of the strings nor provides a design that causes the vibrational frequencies of the strings to be equal. In particular, because studs and screws hold the string loops instead of the means of individually and separately attached strings of the present invention, the vibrational frequencies of the studs and screws will work to detune the frequencies of the strings, thereby preventing equal vibrational frequencies for each of the strings to allow optimal performance as is required by claim 11 of the present invention. Therefore, the Examiner not only erroneously stated that Melby teaches that the vibrational frequencies of the strings will be equal because the string lengths are equal, but also ignored the added limitation of selecting tension and/or mass values of the strings to cause equal vibrational frequencies for each of the strings, as required in claim 1 and absent in Melby.

The Applicant therefore respectfully submits that claim 11 is patentable over Melby and requests that the rejection be reversed since Melby fails to teach or suggest the limitations taught in claim 11. It should be noted that the Applicant attempted to incorporate the limitations in claim 11 into claim 1 in an after-final amendment in an effort to more clearly show the difference and clearly place the application in allowance, but the Examiner did not wish to enter the amendment.

Rejection of claims 2, 6 and 13

As explained above, the Applicant submits that Melby does not disclose or suggest all of the limitation of the base claim 1 from which claims 2, 6 and 13 depend. Therefore, because claims 2, 6 and 13 provide only further limitations to claim 1, the Examiner's rejection of these claims should be withdrawn.

VIIID. ARGUMENTS--REJECTIONS UNDER 35 U.S.C. 103(a),

(37 C.F.R. 1.192(c)(8)(iv))

Rejection of Claims 4, 7, 9 and 12

The issue presented on appeal is whether claims 4, 7, 9 and 12 are unpatentable under 35 U.S.C. 103(a) as being obvious over Melby. The Applicant replies in the negative and submits that the claimed invention is patentably distinct over the cited reference. As explained above, the Applicant submits that Melby does not disclose or suggest all of the limitation of the base claim 1 from which claims 4, 7, 9 and 12 depend. Therefore, because claims 4, 7, 9 and 12 provide only further limitations to claim 1, the Examiner's rejection of these claims should be withdrawn.

In presenting a prima facie case of obviousness to maintain an obviousness rejection, an Examiner must show that the prior art reference (or references when combined) teach or suggest all of the claim limitations. *In re Royka*, 180 USPQ 580 (CCPA 174). Since the Examiner has failed to meet the burden of presenting a prima facie case for obviousness, the Applicant respectfully submits that claims 4, 7, 9 and 12 are patentable over Melby and requests that the rejection be reversed.

The Board of Appeals, based on the above, is respectfully requested to revise the rejection of the Examiner and allow claims 1, 2, 4, 6, 7, and 9-13 of the present Application.

Respectfully submitted,

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ATTORNEYS FOR APPLICANT

1 IX. APPENDIX OF CLAIMS (37 C.F.R. 1.192(c)(9))

2 1. (Twice Amended) A racket comprising:

3 a frame with a handle defining a longitudinal main axis;

4 a head connected to the handle;

5 said head having parallel longitudinal sides and parallel transversal sides,
6 said sides being firmly connected together at their ends such that each of said sides are
7 substantially inflexible in relation to each other;

8 said head having a racket face, to be spanned by strings;

9 said head having a means for securing strings to the frame;

10 a plurality of transversal strings, all being of substantially identical length,
11 running essentially parallel to each other and generally perpendicular to said longitudinal
12 axis and secured to the frame; and

13 a plurality of longitudinal strings, all being of substantially identical
14 length, running essentially parallel to each other and parallel to said longitudinal axis and
15 secured to the frame, the transversal strings and longitudinal strings together covering the
16 entire racket face.

17 2. The racket defined in claim 1 wherein said head and said racket face are rectangular
18 shaped.

19 4. The racket defined in claim 1 wherein the sides of said racket face curve slightly outward,
20 having such a curvature so that the string tension brings the sides back to the substantially
21 straight and parallel position.

- 1 6. The racket defined in claim 1 wherein the distances between the intersection points of all
2 of said longitudinal strings and all of said transversal strings is equal.
- 3 7. The racket defined in claim 1 wherein the width of said racket face is 12", the length of
4 said racket face is 14.5", the length of said elongated handle is 8" and the total length of
5 the racket is 28".
- 6 9. The racket defined in claim 4 wherein the maximum curvature of the sides of said racket
7 face is less than 0.5".
- 8 10. The racket defined in claim 1 wherein the space between the longitudinal strings varies
9 and the space between the transversal strings varies.
- 10 11. The racket defined in claim 1 wherein the tension and/or mass values of said longitudinal
11 strings and said transversal strings are selected so that the vibrational frequencies of the
12 strings are equal.
- 13 12. The racket defined in claim 1 wherein the tension and/or mass values of said longitudinal
14 strings and said transversal strings are selected in accordance with desired ball response
15 characteristics.
- 16 13. The racket of claim 1 wherein said racket is a tennis racket, a racquetball racket, a
17 badminton racket or a squash racket.

X. APPENDIX A**Drawings****Table 2**

VELOCITY RATIOS ON FIXED RACKET			
vertical position	horizontal position		
	x = 0.5	x = 2.5	x = 4.5
y = 7.5	0.863	0.825	0.770
y = 4.5	0.868	0.835	0.774
y = 1.5	0.778	0.771	0.749

Table 3

BALL IMPACTS ON FIXED RACKET					
Impact Point		String Defl	Ball Compr	Imp Time	Vel Ratio
x (in)	y (in)	(in)	(in)	(ms)	VR
0.5	1.5	0.196	1.121	2.772	0.778
0.5	4.5	0.330	1.039	2.928	0.868
0.5	7.5	0.333	1.018	3.089	0.863
2.5	1.5	0.185	1.128	2.749	0.771
2.5	4.5	0.296	1.087	2.915	0.835
2.5	7.5	0.296	1.066	2.968	0.825
4.5	1.5	0.145	1.128	2.720	0.749
4.5	4.5	0.196	1.114	2.779	0.774
4.5	7.5	0.196	1.100	2.794	0.770

Table 4

BALL IMPACTS ON RIGID SURFACE				IMPACTS ON FIXED FRAME (T _{en} = 60 lbs)			
Imp Speed	Ball Compr	Imp Time	Vel Ratio	Ball Compr	String Defl	Imp Time	Vel Ratio
(mph)	(in)	(ms)	VR	(in)	(in)	(ms)	VR
20	0.394	3.437	0.743	0.363	0.066	3.722	0.842
40	0.673	2.965	0.705	0.607	0.150	3.386	0.853
60	0.928	2.729	0.692	0.818	0.240	3.210	0.859
80	1.155	2.580	0.678	1.018	0.333	3.089	0.863
100	1.362	2.453	0.667	1.204	0.430	3.012	0.868

Table 5

BALL IMPACTS ON FIXED FRAME (Vel = 80 mph)				
Tension	Ball Compr	String Defl	Imp Time	Vel Ratio
(lbs)	(in)	(in)	(ms)	VR
50	1.279	0.354	2.844	0.923
60	1.259	0.295	2.757	0.860
70	1.252	0.250	2.695	0.815

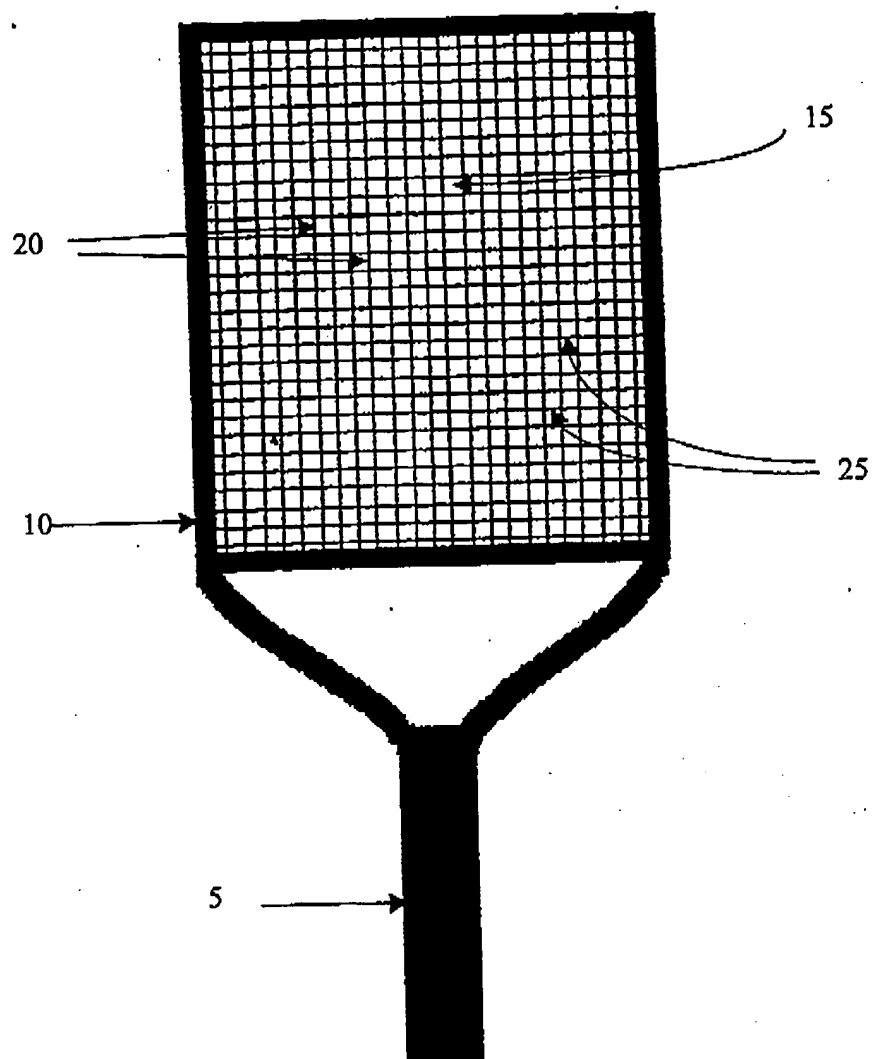


FIG. 1

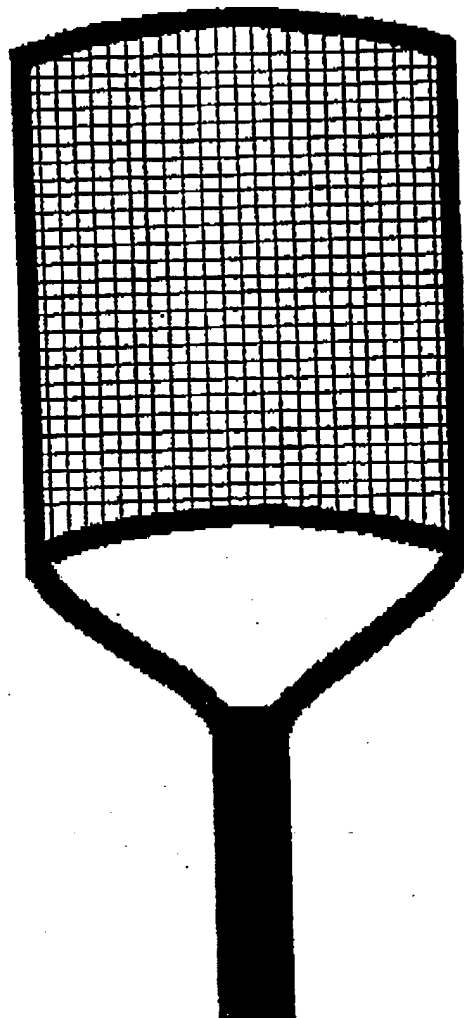


FIG. 2

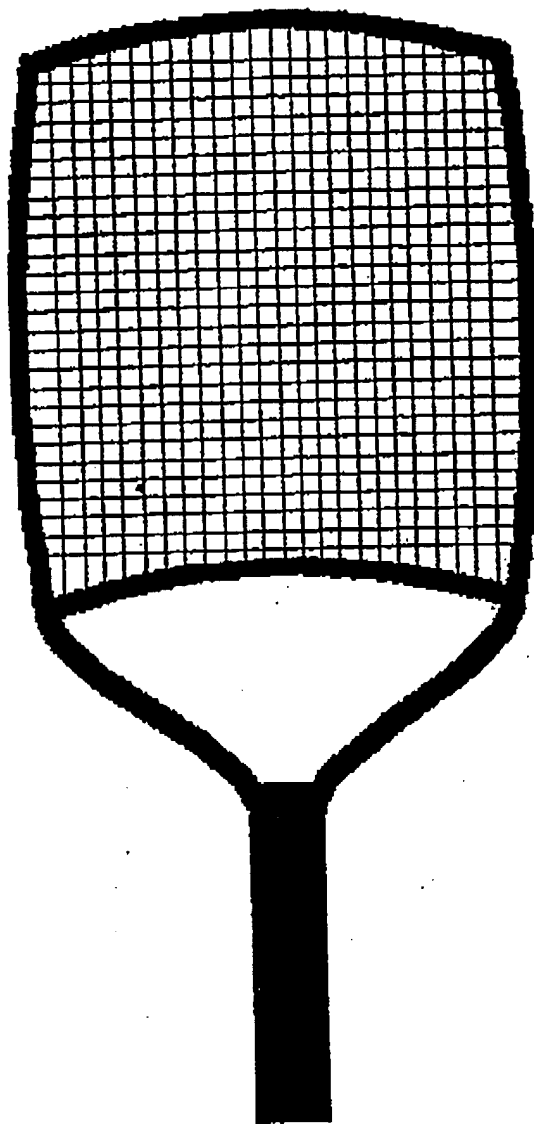


FIG. 3

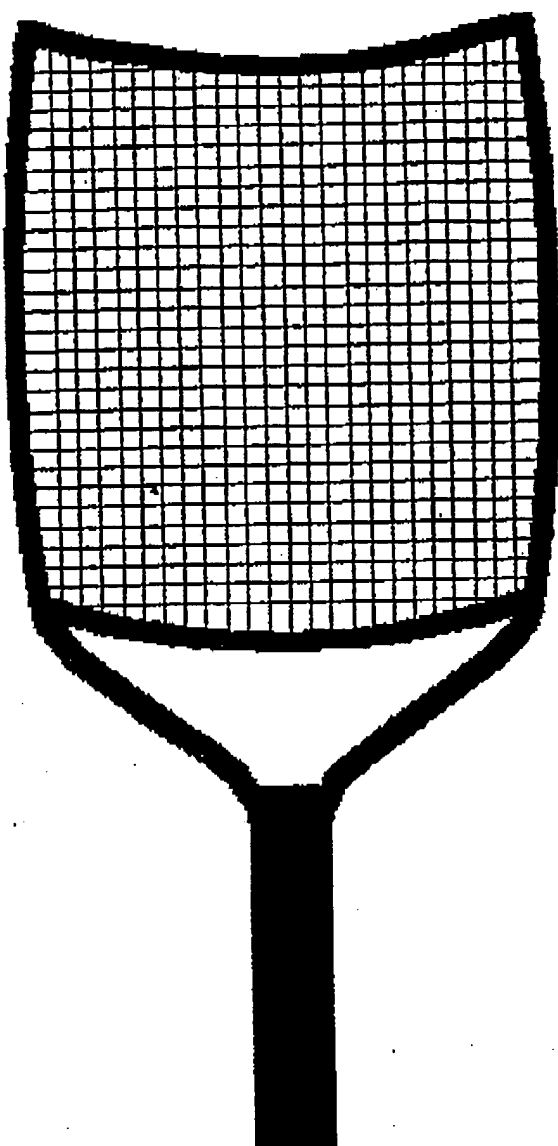


FIG. 4

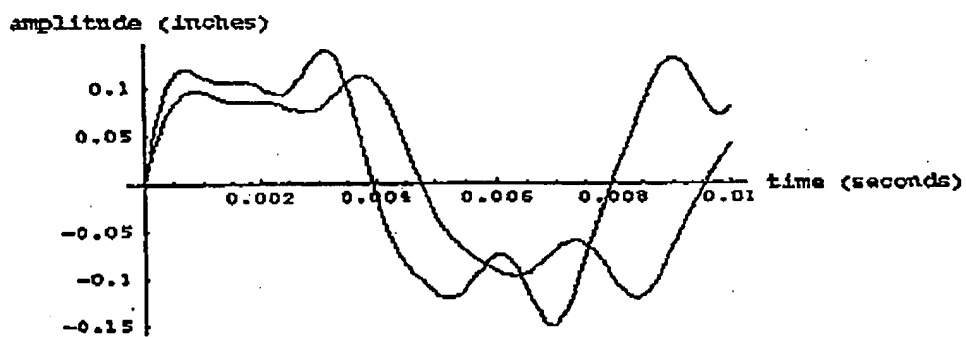


FIG. 5

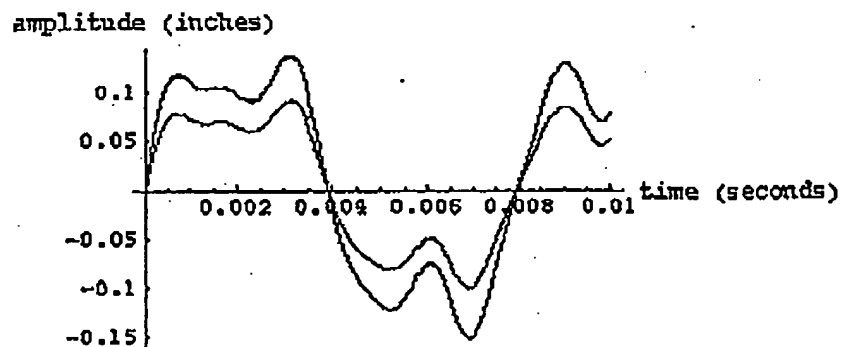


FIG. 6

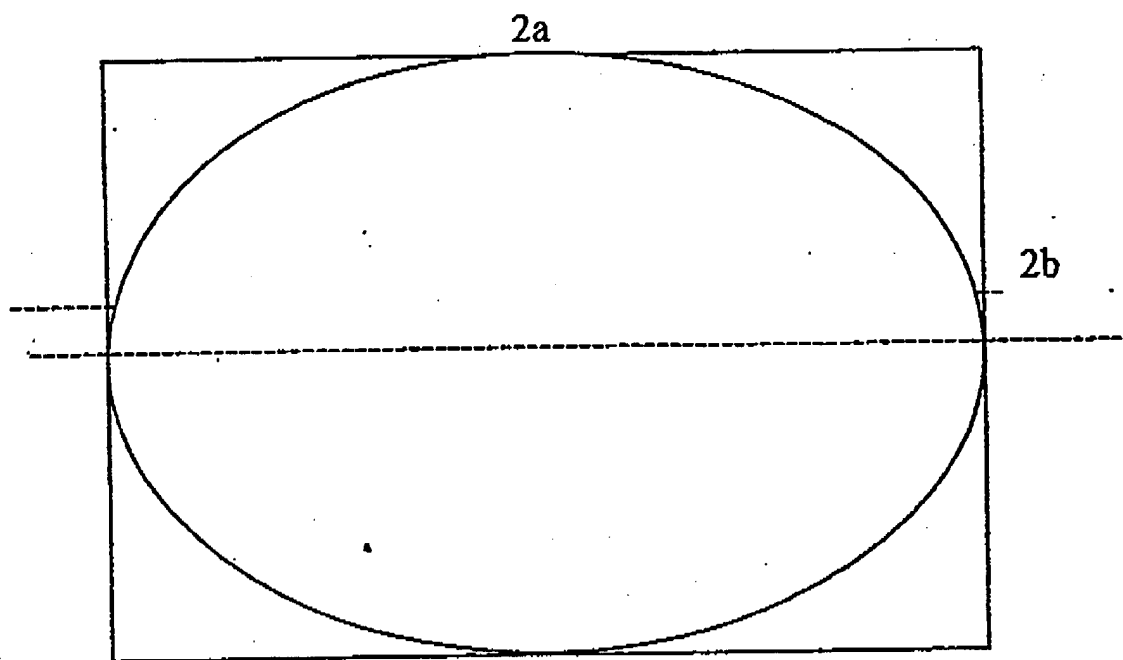


FIG. 7

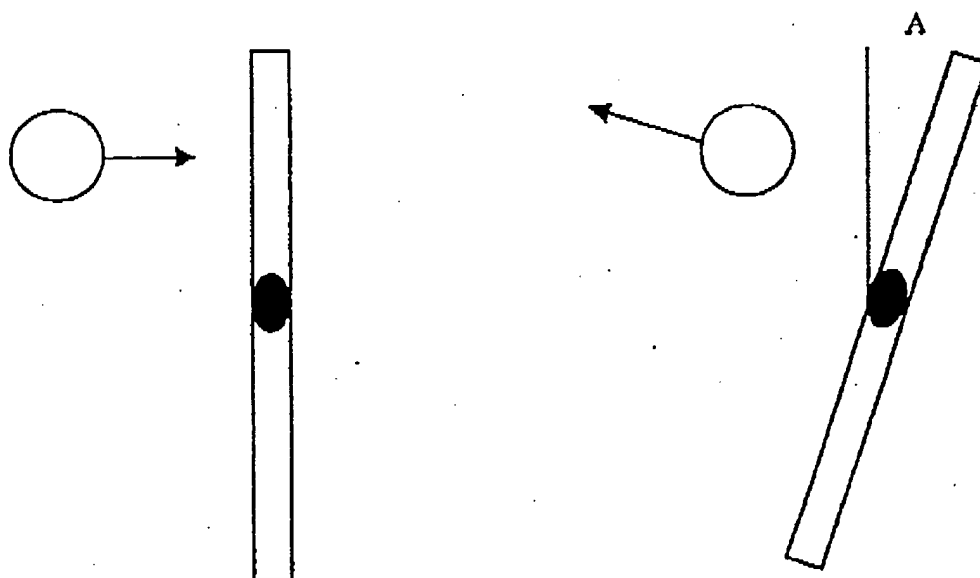


FIG. 8

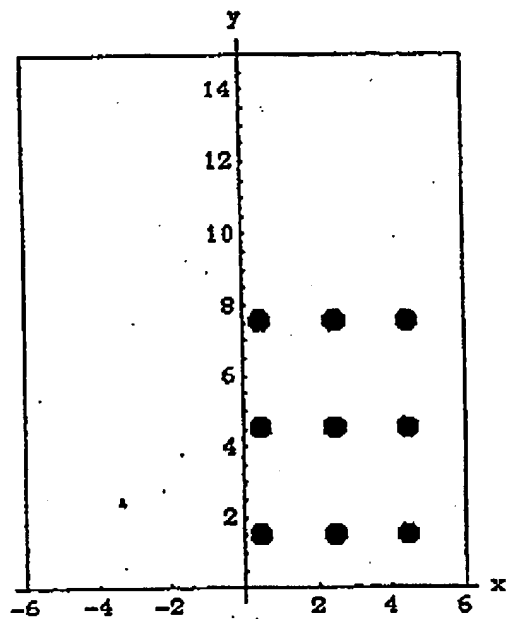


FIG. 9

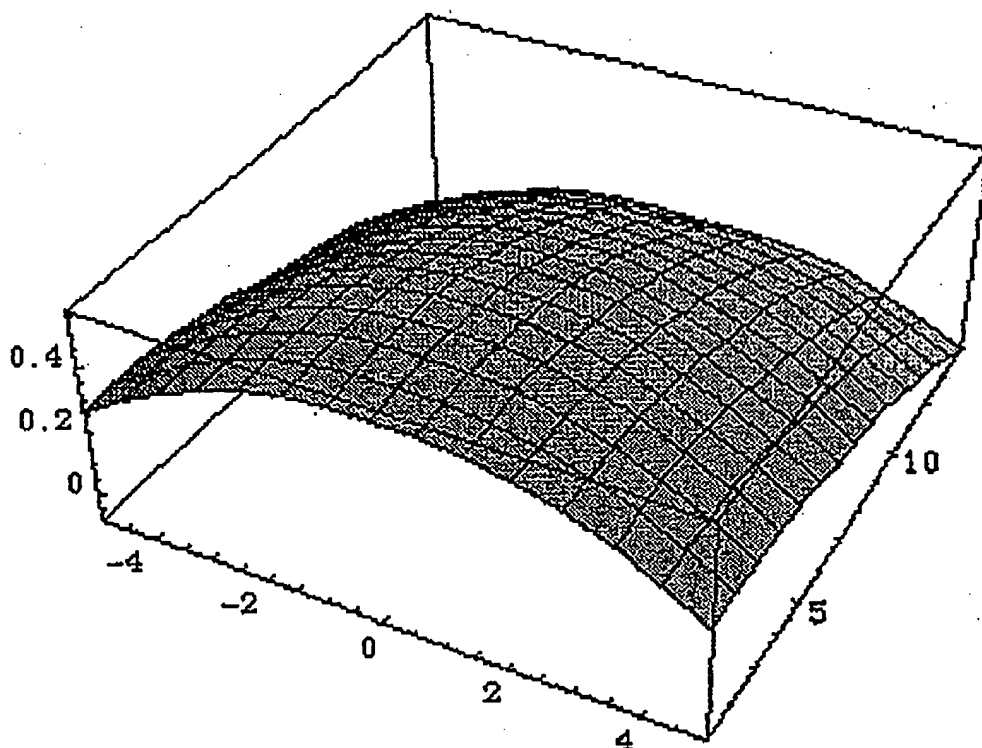


FIG. 16

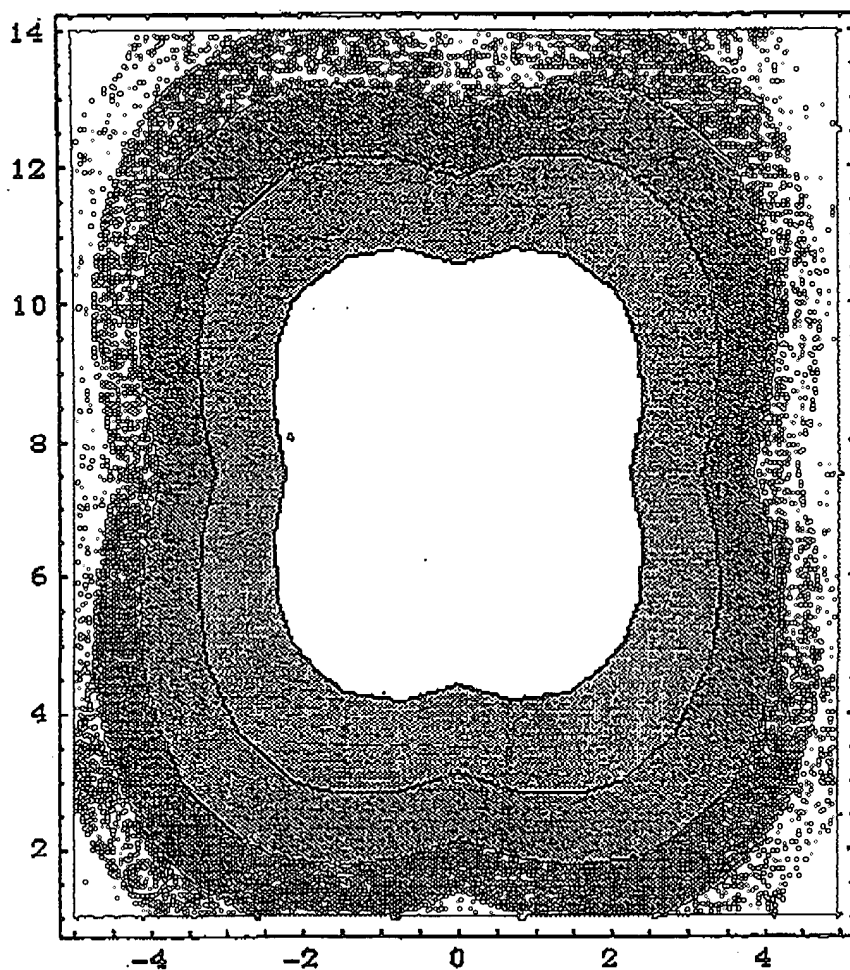


FIG. 10

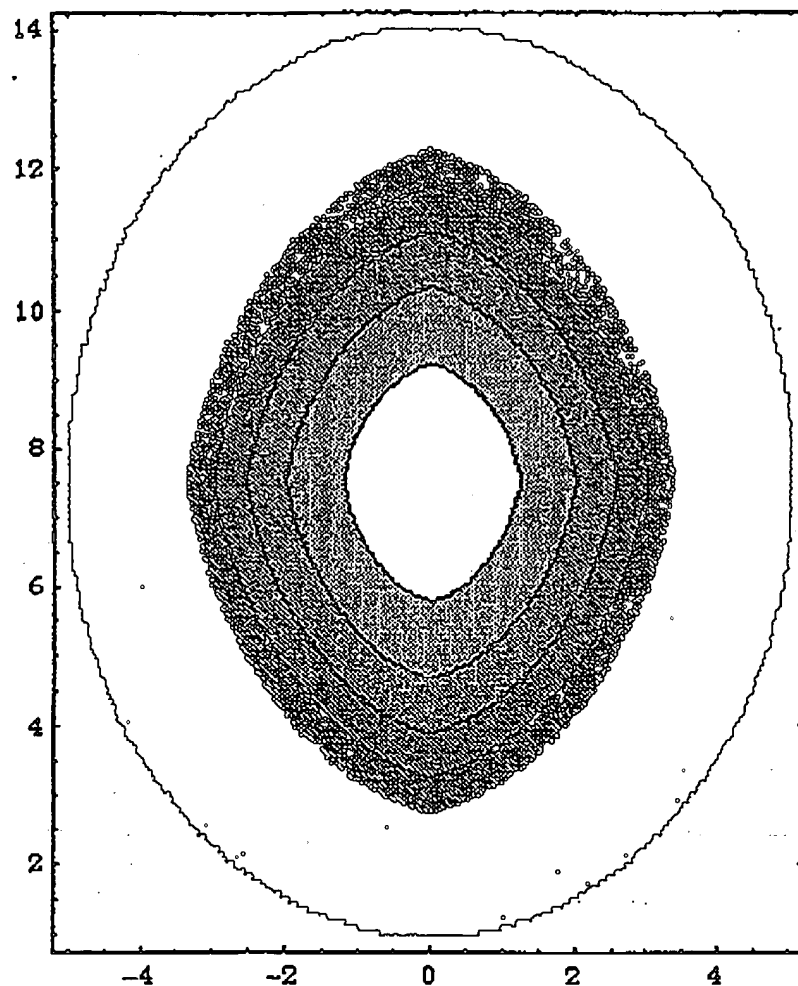


FIG. 11

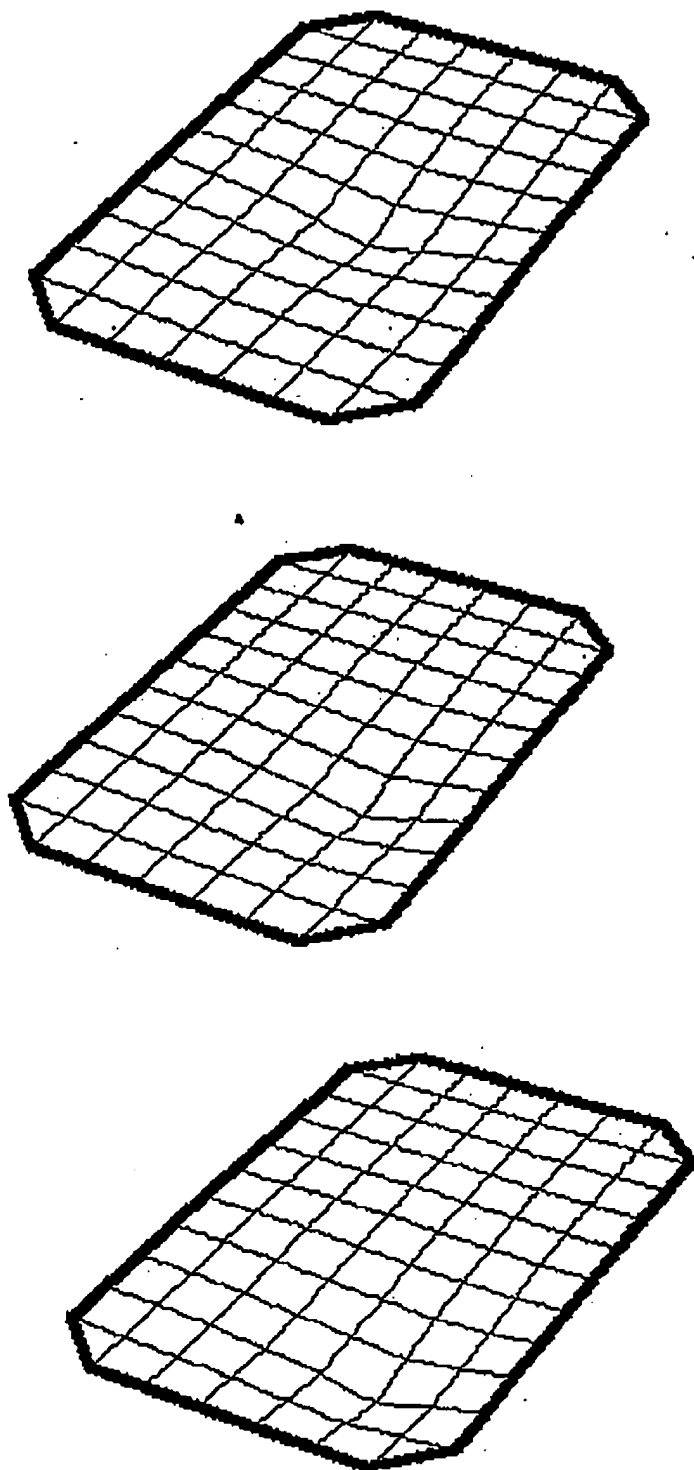


FIG. 12

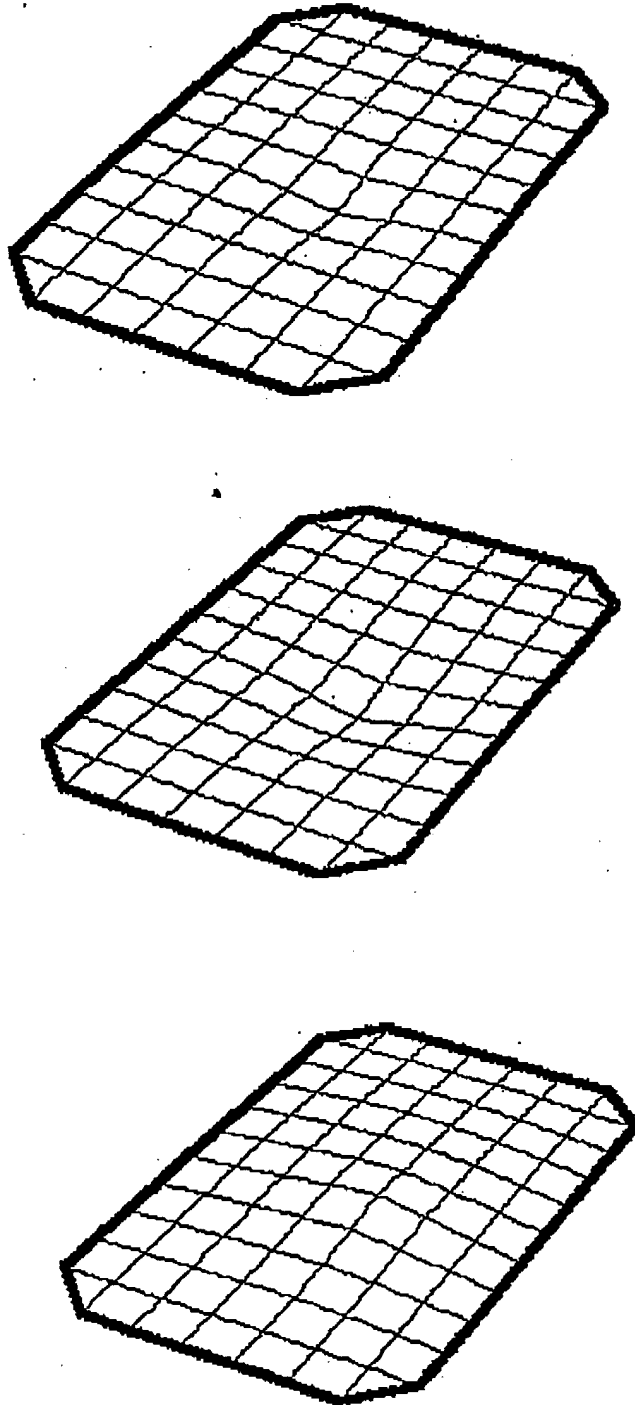


FIG. 13

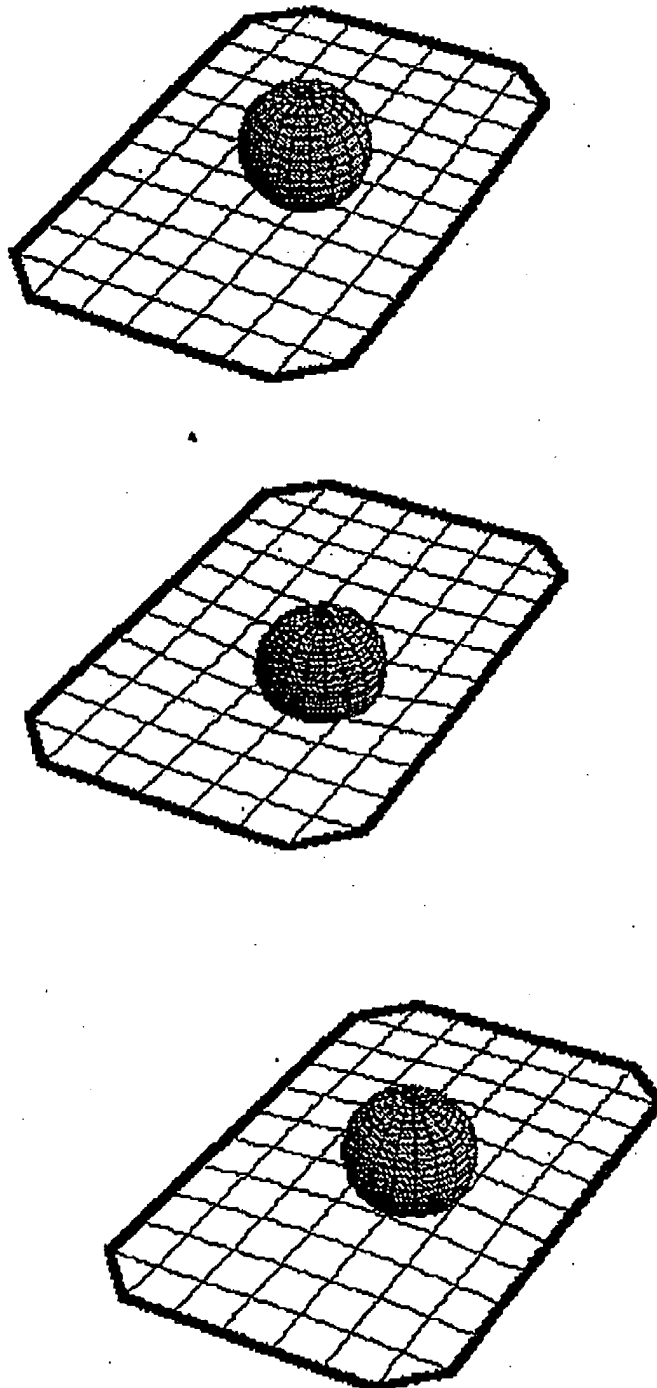


FIG. 14

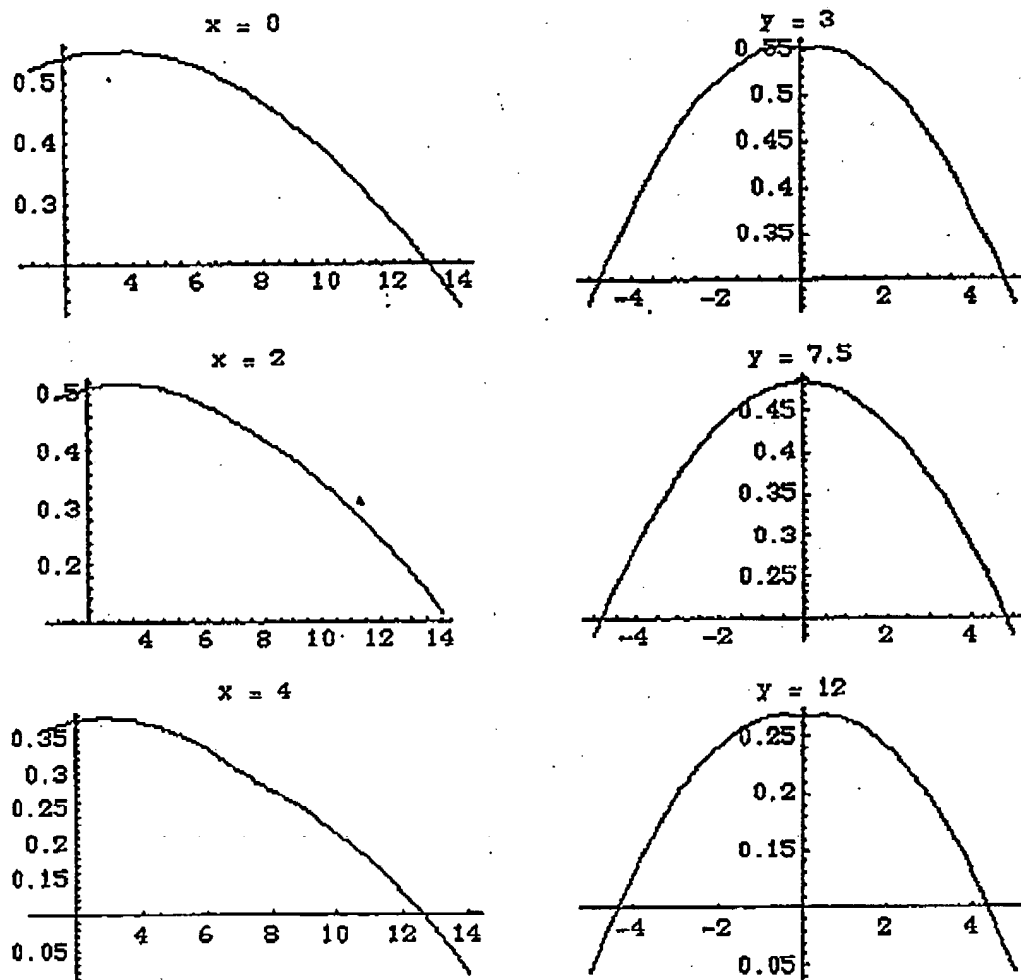


FIG. 15

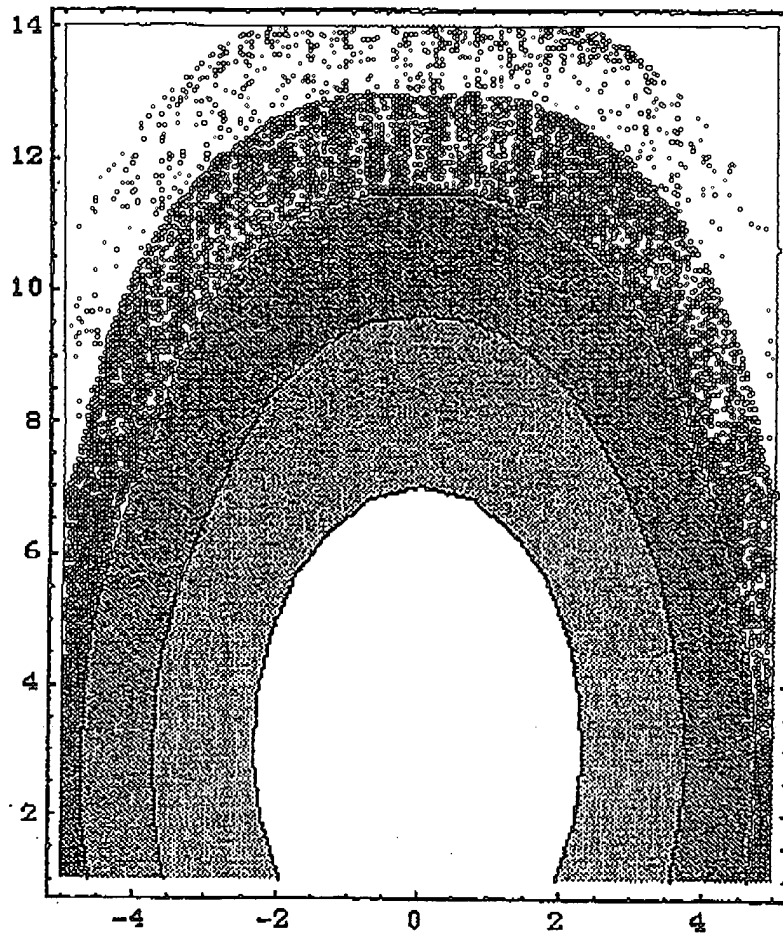


FIG. 17

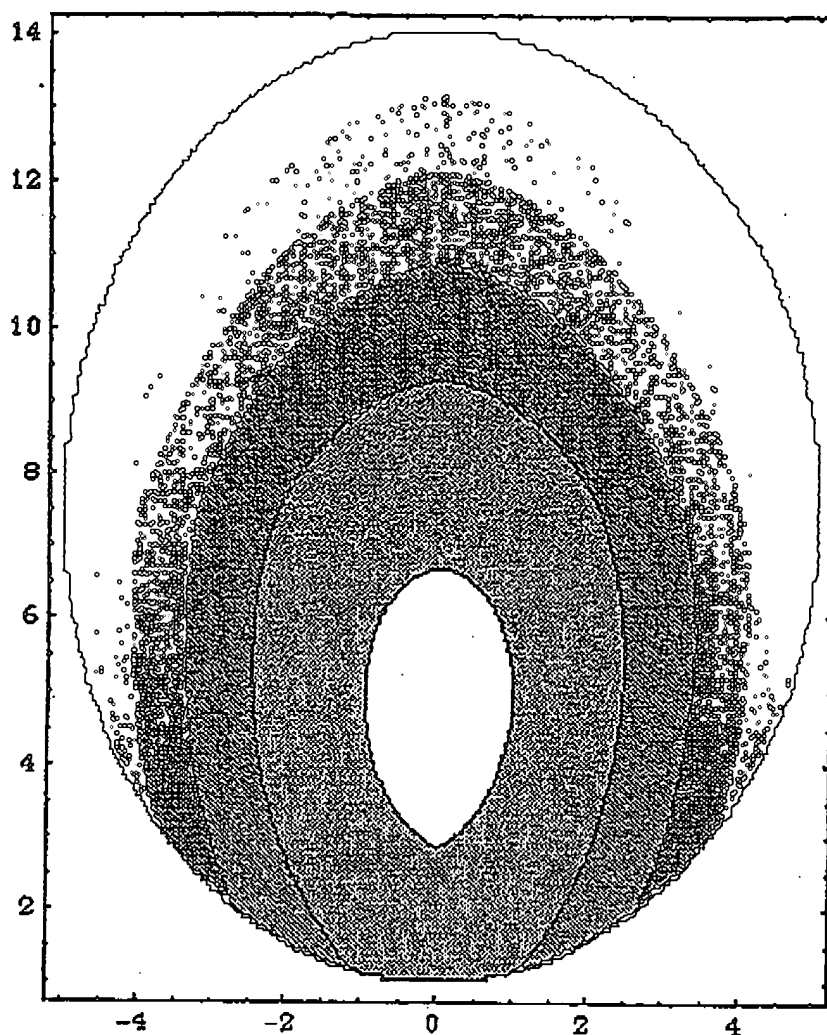


FIG. 18

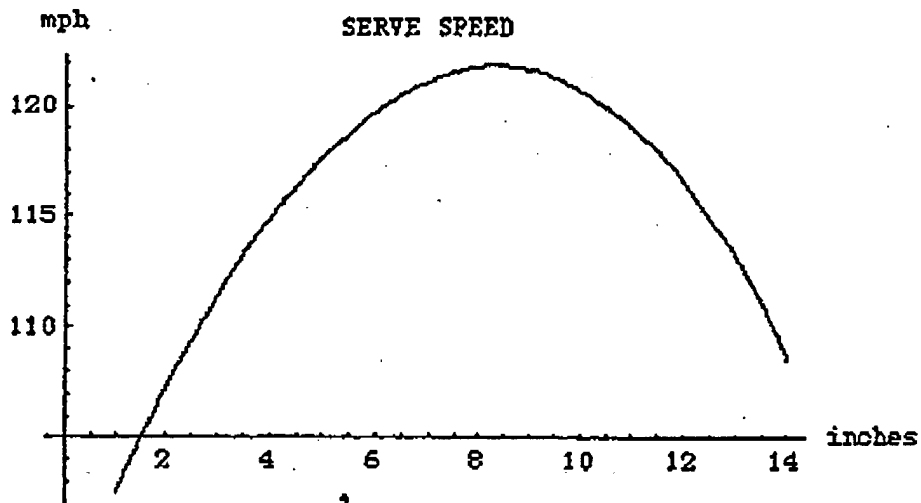


FIG. 19

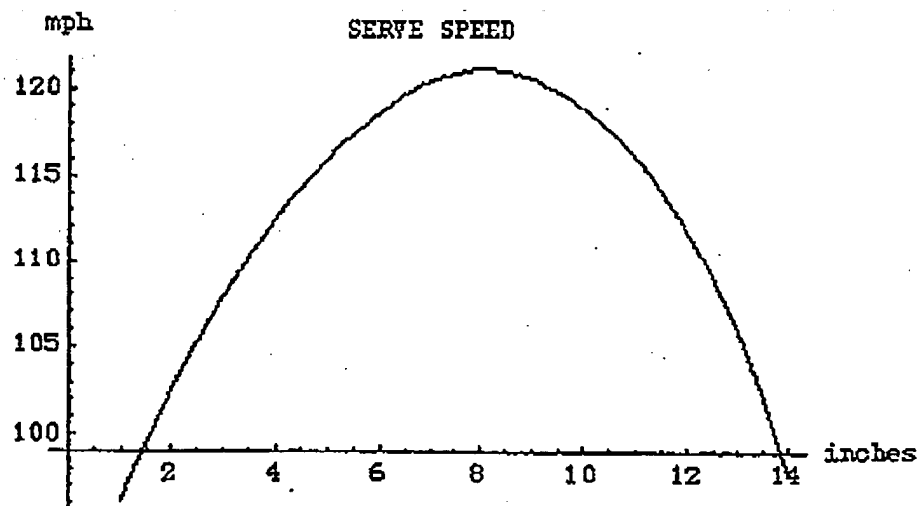


FIG. 21

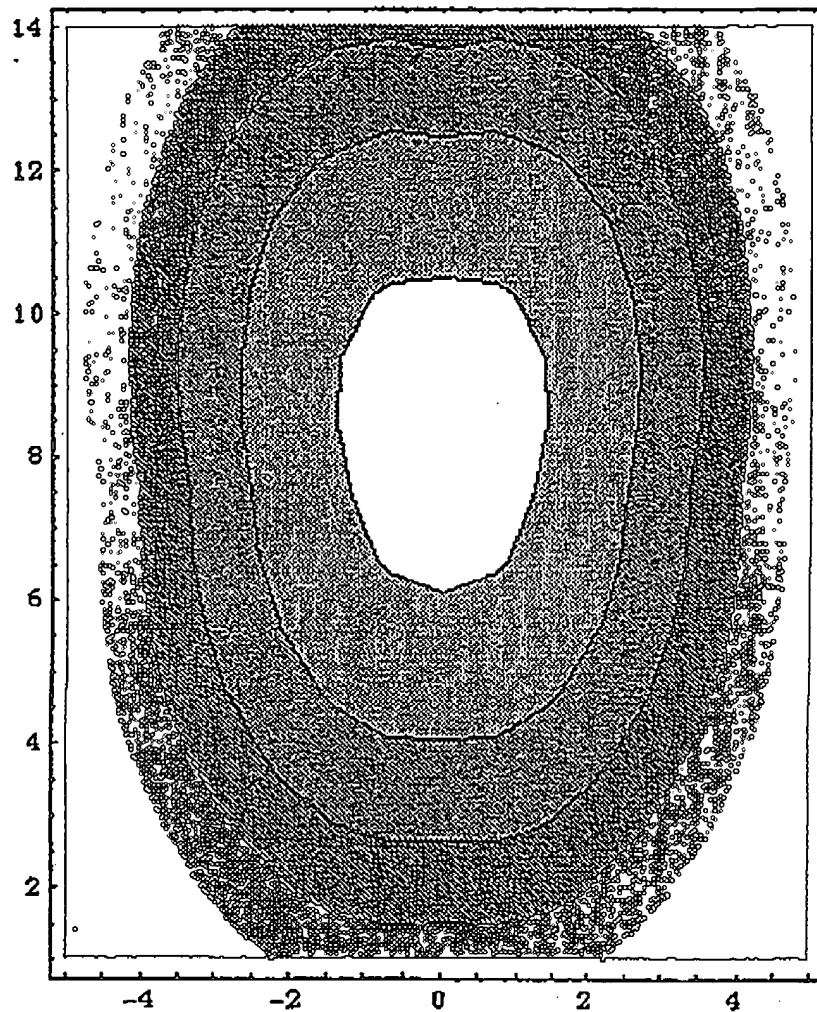


FIG. 20

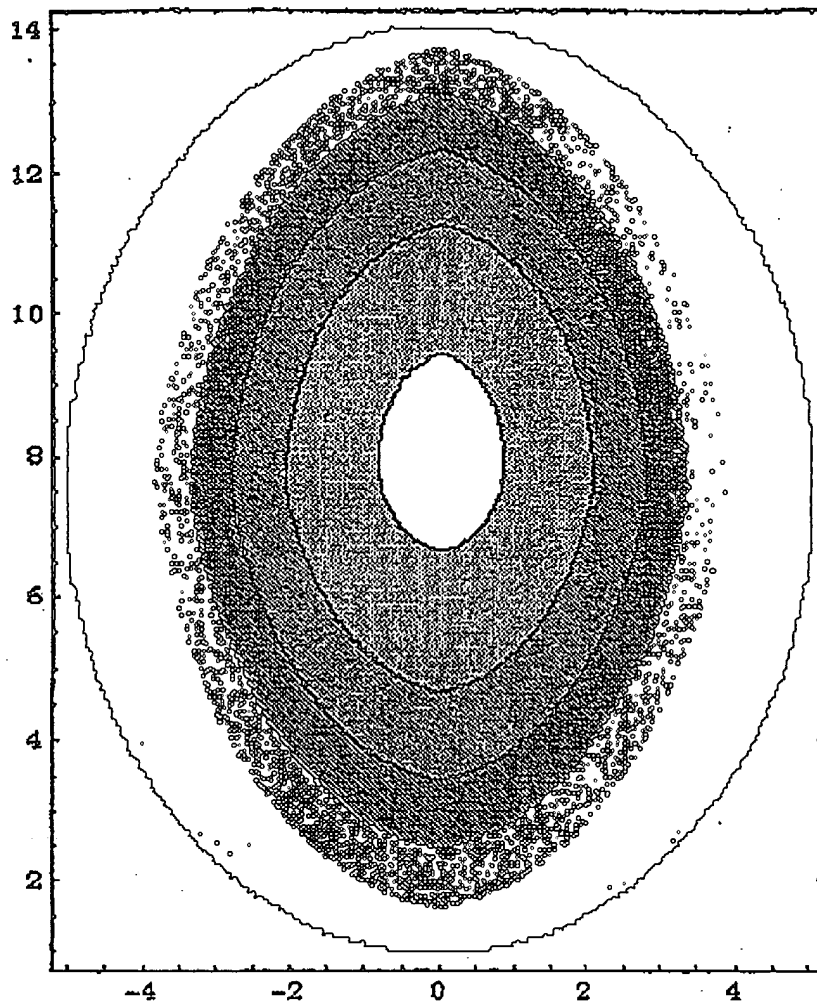


FIG. 22